ERTS-1 DATA AS A TEACHING AND RESEARCH TOOL IN THE DEPARTMENT OF GEOLOGY

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BI-ANNUAL PROGRESS REPORT

UNIVERSITY OF ALASKA

ERTS PROJECT 110-11

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I- INTRODUCTION:

This report summarizes the work performed during the second six months of contract no. NAS5-21833, ERTS-1 Project no. 110-11: ERTS Data as a Teaching and Research Tool in the Department of Geology.

During this period, color and black & white coverage of most of Alaska was received and this material has been integrated into the teaching and research of the Department of Geology.

II- STATUS OF PROJECT:

1. Objectives and Progress of Work: During this report period, color and black & white prints have been received for about 80% of the state of Alaska that were taken from August to October, 1972. These have been indexed and a partial mosaic was constructed for the southeastern one-half of Alaska. This was constructed from "bulk" black and white prints as a preliminarly step to completion of a mosaic of the whole state. There was no particular problem in constructing this uncontolled mosaic although a few prints proved too distorted to fit. A few small mosaics were also constructed from color prints; these proved eminently suitable for geologic purposes; unfortunately however, the color balance between adjacent flight lines and at different seasons proved too poor to even consider a color mosaic of the whole state in a reasonable time.

2. Applicability to Project Objectives: ERTS-1 prints have proved most valuable in showing the goelogy of Alaska as well as for use in illustrating a number of general geologic features (esp. igneous rocks and linear structural features. They also serve to illustrate many of the use of remote sensing in general. In particular, some examples of their use are:

   (a) Structural Geology: Faults in general and especially the Denali Fault show up spectacularily. Folding also shows up well in the western Brooks Range.

   (b) Economic Geology: Many plutonic bodies associated with mineralization (esp. the Sn-bearing granites of the Seward Peninsula) show up well. The ore bodies are invariably too small to see as ERTS-1 scale but the prints significantly aid in explaing the regional geology; the explanations then

continue with other material down to hand specimen scale. ERTS material is also almost unique in its ability to relate ore deposits to regional linear features.

(c) General Geology & Geography: 35mm slides of the ERTS prints (esp. in color) have been used extensively in achieving some sort of regional framework for Alaskan geology and geography. In basic courses in particular, they seem much easier to grasp and visualize than maps.

(d) Geology of Alaska: A graduate course with this title used the prints extensively although most of them arrived very late in the semester. It is planned that they will be annotated in detail when the course is again taught this fall.

(e) The ERTS prints and 35mm slides have also been used for a number of "public service" lactures. In addition, any number of geologists have come in and browsed through the file or asked about coverage of the area in which they were working.

In general, the ERTS prints have proved most useful in teaching as a supplement to other material at larger scale or in different formats such as maps. As such, they are unique.

III - NEW TECHNOLOGY: None

IV - PLANS FOR NEXT REPORTING PERIOD:

The details of future plans basically will be controlled by the shipment of prints from NASA. A large data request was sent in May; when it arrived, the prints will be indexed as before. This data request should furnish enough black and white prints to complete the mosaic of the whole of Alaska. New material will be monitored through the summer of 1973 so that the black and white coverage represents the best available for the mosaic. Color prints will again be ordered this summer (only summer prints are really satisfactory for most geologic purposes in this latitude if only because they "look" the same) to try to achieve complete coverage of the state.

V - RECOMMENDATIONS:

The project has stretched out far beyond what was originally envisioned. Teh late launch, the cessation of winter operations over Alaska, and especially the delay in obtaining prints from

NASA all contribute to the delay. However, there is really no particular problem that results and there are probably already sufficient "recommendations" on these "delays" already.

VI - PUBLICATIONS: None

VII -REFERENCES: None

APPENDIX A - CHANGE IN STANDING ORDER FORM: None

APPENDIX B - ERTS DATA REQUEST FORMS:

(1) February 26, 1973: 156 prints in MSS bands 6 & 7 & Color; Almost all have been received.

(2) May 25, 1973: 133 prints in MSS band 7; none received to date.

APPENDIX C - ERTS IMAGE DESCRIPTOR FORMS: None

APPENDIX D - SIGNIFICANT RESULTS:

During the sixth bi-monthly period, a mosaic was constructed in MSS band 6 of the southeastern one-half of Alaska. This was a preliminary but highly successful effort. A mosaic of the whole state awaits additional coverage to fill in some gaps. In addition, new material is being monitored as it arrived at the Geophysical Institute and from the NASA Indices for inclusion into the departmental collections. No geology courses are being taught this summer.